

WHAT IS CLAIMED IS:

1. A method for cleaning a liquid ejector including a liquid ejection head for ejecting liquid  
5 from a nozzle, the method including:  
sealing the liquid ejection head with a cap means;  
and

generating negative pressure with a gear pump connected to the cap means, and discharging fluid from  
10 the liquid ejection head with the negative pressure, the method being characterized by:

suctioning fluid from the cap means with the gear pump so that a suction amount of the fluid per unit time becomes equal to a first suction amount in order to  
15 discharge fluid from the nozzle; and

afterwards, changing the suction amount of the fluid from the cap means per unit time from the first suction amount to a smaller second suction amount.

20 2. A liquid ejector comprising:

a liquid ejection head including a nozzle for ejecting a liquid;

a cap means for sealing the liquid ejection head;

a gear pump, connected to the cap means, for  
25 generating negative pressure and discharging fluid out of the liquid ejection head with the negative pressure in a state in which the cap means seals the liquid ejection head, the liquid ejector being characterized in that the liquid ejector:

30 suctioning fluid from the cap means with the gear pump so that a suction amount of the fluid per unit time becomes equal to a first suction amount in order to discharge fluid from the nozzle; and

afterwards, changes the suction amount of the fluid  
35 from the cap means per unit time from the first suction

amount to a smaller second suction amount.

3. The liquid ejector according to claim 2,  
wherein the gear pump is driven so that the suction  
5 amount per unit time becomes equal to the first suction  
amount in order to discharge fluid from the nozzle, and  
afterwards, is driven so that the suction amount per  
unit time becomes equal to the second suction amount per  
unit time, and then stops.

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4. The liquid ejector according to claim 2,  
wherein the gear pump is driven at a first rotation  
speed so that the fluid in the cap means is suctioned in  
the first suction amount, and afterwards, driven at a  
15 second rotation speed, which is lower than the first  
rotation speed, so that the fluid in the cap means is  
suctioned in the second suction amount.

5. The liquid ejector according to any one of  
20 claims 2 to 4, wherein the gear pump includes a housing  
and two gears accommodated in the housing.

6. The liquid ejector according to any one of  
claims 2 to 5, further comprising:

25 a detecting means for detecting an increase and  
decrease in load of the gear pump caused by a flow of  
fluid into the gear pump and a flow of fluid out of the  
gear pump;

wherein the gear pump changes the suction amount per  
30 unit time from the first suction amount to the second  
suction amount after the detecting means detects an  
increase in the load of the gear pump.

7. The liquid ejector according to any one of  
35 claims 2 to 6, further comprising:

a flow passage for guiding liquid to the nozzle; and  
a valve device arranged upstream from the nozzle in  
the flow passage;

wherein the valve device includes a pressure  
5 chamber, for storing liquid, and a flexible member,  
displaced in accordance with a pressure difference  
between an interior and exterior of the pressure  
chamber, and the valve device opens and closes based on  
the displacement of the flexible member.

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8. A method for cleaning a liquid ejector including  
a liquid ejection head for ejecting liquid from a  
nozzle, the method comprising:

sealing the liquid ejection head with a cap means;  
15 generating negative pressure with a gear pump  
connected to the cap means and suctioning fluid from the  
cap means in a first suction amount per unit time with  
the negative pressure;

determining whether or not fluid has been discharged  
20 from the nozzle; and

changing the suction amount per unit time from the  
first suction amount to a smaller second suction amount  
when determining that fluid has been discharged from the  
nozzle.